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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,004	01/07/2002	Howard Gordon Zolla	SJ0920010034US1	4715
7590		04/28/2004	EXAMINER	
Walter W. Duft		NGUYEN, DONGHAI D		
10255 Main Street, Suite 10		ART UNIT		
Clarence, NY 14031		PAPER NUMBER		
		3729		

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/041,004	ZOLLA, HOWARD GORDON	
	Examiner	Art Unit	
	Donghai D. Nguyen	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-17, 20-27 and 30 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 18, 19, 28 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The proposed reply filed on February 20, 2004 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 10-12, 20-22, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobrin et al in view of US Patent No.5,315,151 to Hsieh et al.

Regarding claims 1, 11, and 21, Kobrin et al. disclose a method for reducing feature size in a thin film magnetic write head using low temperature deposition coating of photolithographically-defined trenches, comprising the steps of: forming a base layer (50); applying a plating seed layer (51) over said base layer; applying a photoresist layer (52) over said plating seed layer to a desired thickness; defining a trench (60) in said photoresist layer that exposes said plating seed layer, said trench having substantially vertical side walls and a bottom defined by said plating seed layer (Fig. 4); anisotropically etching horizontal portions of said spacer layer to remove spacer layer material from said trench bottom to expose said plating seed layer while leaving intact vertical portions of said spacer layer that cover said trench side walls, thereby defining a narrowed trench (Fig. 4, step 408); electroplating metallic material (65; 78) onto said plating seed layer to form a structure in said narrowed trench (col. 5, line 29); stripping

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away said photoresist layer; and stripping away said spacer layer vertical portions; whereby a structure of reduced feature size is formed (Fig. 2, step 211; Fig. 4, step 411).

However, Kobrin et al do not disclose the depositing an insulative spacer layer using a low temperature chemical vapor deposition process to cover said trench side walls. Hsieh et al teach the step of depositing an spacer layer (64) using a low temperature chemical vapor deposition process to cover said trench side walls (Fig. 7) for providing a defect-free thin layer (Col. 2, lines 3-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modified Kobrin et al to form the spacer layer by using the low temperature chemical vapor deposition process as taught by Hsieh et al for providing the defect-free thin layer.

Claims 2, 12, and 22 also met as set forth above.

Regarding claims 10, 20, and 30, see col. 5, lines 3-6.

4. Claims 3-7, 13-17 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobrin et al in view of Hsieh et al as applied to claims 1, 10, and 20 above, and further in view of Giammarco et al.

Kobrin et al, as modified, do not disclose the spacer layer comprises a material from the group consisting of semiconductors, metal oxides, metal nitrides, tantalum oxide, silicon dioxide and silicon nitride; the spacer layer is deposited at a thickness of up to about 200 nm; and the chemical vapor deposition process is performed at a low temperature.

However, Giammarco et al disclose the spacer layer comprises a material from the group consisting of semiconductors, metal oxides, metal nitrides, tantalum oxide, silicon dioxide and

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silicon nitride (Col. 4, lines 31-33); the spacer layer is deposited at a thickness of up to about 200 nm (Col. 4, lines 49-51); and the chemical vapor deposition process is performed at a temperature that does not cause deformation of said trench defined in said photoresist layer (col. 4, line 33-36) for forming a narrow and deep trench (Col. 2, line 36).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Kobrin et al to have the spacer layer comprises a material from the group consisting of semiconductors, metal oxides, metal nitrides, tantalum oxide, silicon dioxide and silicon; the spacer layer is deposited at a thickness of up to about 200 nm; and the chemical vapor deposition process is performed at a temperature that does not cause deformation of said trench defined in said photoresist layer for forming a narrow and deep trench.

Allowable Subject Matter

5. Claims 8-9, 18-19, and 28-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims 1-7, 10-17, 20-27, and 30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion


7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN



**PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700**